

**LDM-4604/xDIL
Instruction Manual**

DIL Laser Diode Mount Module

WARRANTY

ILX LIGHTWAVE CORPORATION warrants this product to be free from defects in material and workmanship for one year from the date of shipment. During the warranty period we will repair or replace the unit, at our option, without charge.

Limitation

This warranty does not apply to defects caused by abuse, any modifications, or use of the laser mount module for which it was not intended.

This warranty is in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability or fitness for any particular purpose. ILX Lightwave Corporation shall not be liable for any incidental, special, or consequential damages.

If a problem occurs, please notify ILX Lightwave Corporation and thoroughly describe the nature of the problem and give the model and serial numbers. You will be given prompt attention, service information, and return instructions if necessary.

Returning a Laser Diode Mount

If a laser diode mount module is to be shipped to ILX Lightwave for repair or service, be sure to:

- Obtain a return authorization number from the factory.
- Attach a tag to the mount module identifying the owner and indicating the required service or repair. Include the mount module serial number located on the bottom part of the pedestal.
- Remove the mount module from the chassis. Place the mount module in the original packing container with at least 3 inches (75 mm) of compressible packaging material. **Shipping damage is not covered by this warranty.**
- Send the mount module to ILX Lightwave transportation pre-paid, referencing the return authorization number. We suggest that you insure the shipment.

If the original shipping container is not available, place your mount in a container which will insure at least 3 inches (75 mm) of compressible packaging material on all sides.

Repairs will be made and the mount returned, transportation pre-paid. Repairs are warranted for the remainder of the original warranty or for 90 days, whichever is greater.

Claims for Shipping Damage

When you receive the product, inspect it immediately for any damage or shortages on the packing list. If the product is damaged, immediately file a claim with the carrier. The factory will supply you with a quotation for estimated costs of repair. You must negotiate and settle with the carrier for the amount of damage.

COMMENTS / SUGGESTIONS / PROBLEMS ?

In order to get the most out of your ILX Lightwave product, we ask that you direct any product operation or service related questions or comments to Customer Support at (406) 586-1244, or toll-free (800) 459-9459, fax (406) 586-9405. When calling, please have the following information on hand (if applicable):

- 1) Product (Model Number) _____
- 2) Options (Model Numbers) _____
- 3) Unit Serial Number _____
- 4) End user name and telephone/fax number

Name: _____

Company: _____

Phone: _____

Fax: _____

- 5) Description/sketch of what is connected to the ILX Lightwave instrument
- 6) Description of the defect or problem

ILX Lightwave Corporation is committed to making the best electro-optic instrumentation available anywhere. To serve you best, we need your ideas and comments on ways to improve our products. We invite you to contact us at any time with your suggestions.

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Manual Part Number: 700285

CHAPTER 1

GENERAL INFORMATION

INTRODUCTION

This manual describes the LDM-4604/xDIL Laser Diode Mount Module with Dual-In-Line (DIL) package sockets, and explains its operation. This module is interchangeable with the butterfly modules in ILX Lightwave's LDM-4616 16-Channel Laser Diode Mount chassis. Alternatively, an empty mount chassis can be purchased as ILX Lightwave part number LDM-4600 for use with DIL and/or butterfly mount modules.

You should read the entire manual to familiarize yourself with the operation of your LDM-4604/xDIL Mount Module before installing laser diodes. In particular, you should read the section on Electrical Connections before installing a laser diode. The information contained in that section is necessary to provide correct electrical connection to your particular laser.

This manual only covers the DIL modules. For complete information, you should also read the **LDM-4616 INSTRUCTION MANUAL** that was shipped with your LDM-4616 Butterfly Mount or your LDM-4600 Mount Chassis.

NOTE

When unpacking the mount module, be sure to save the packaging in case you have to return the module to ILX Lightwave or ship it elsewhere. Shipping damage is not covered under the standard warranty.

PRODUCT OVERVIEW

The LDM-4604/xDIL Laser Diode Mount Module enables convenient mounting of laser diodes that are in Dual-In-Line (DIL) packages. Each module has four DIL sockets. Up to four modules can be mounted in one chassis for a total of 16 lasers in one chassis. All fiber pigtailed lasers point toward the center of the chassis, so there are two "right side" module slots and two "left side" module slots in each chassis. When ordering or installing modules in a chassis, you must determine if the modules are for the right side or the left side slots. The "x" in the module name specifies whether your module is for a right side slot or a left side slot: LDM-4604/RDIL is for right side slots, and LDM-4604/LDIL is for left side slots. You must also pay attention to channel numbers for electrical connections (see details later in this manual).

Configurable pin headers (terminal blocks) must be wired properly to accommodate your particular laser pin configuration. Electrical connections are provided for laser current control and TEC control.

SHIPPING KIT

When you receive your LDM-4604/xDIL Laser Diode Mount Module, verify that the following items were included with the shipping kit:

- (1x) 3/32" hex socket wrench
- (4x) 4-40 x 7/8" screws
- (1x) screwdriver for configuring pin headers
- (4x) 9-wire packs for configuring pin headers
- (1x) 1/16" hex socket wrench
- (1x) Channel numbering labels (only #1-4 or #5-8 should be used on a left module)
(only #9-12 or #13-16 should be used on a right module)

MODEL NUMBERS AND ACCESSORIES

LDM-4604/RDIL Right Side DIL Laser Diode Mount Module
LDM-4604/LDIL Left Side DIL Laser Diode Mount Module

LDM-4600 16-Channel Laser Diode Mount Chassis
RM-141 Slide Rail Rack Mounting Kit (20.5" hole spacing)
RM-142 Slide Rail Rack Mounting Kit (25" hole spacing)
MA-401 Mating Adapter: FC-APC / FC-APC, Wide / Wide keys = N/N = 2.15mm / 2.15mm
MA-402 Mating Adapter: FC-APC / FC-APC, Narrow / Wide keys = R/N = 2.05mm / 2.15mm
MA-403 Mating Adapter: FC-APC / FC-APC, Narrow / Narrow keys = R/R = 2.05mm / 2.05mm
MA-404 Mating Adapter: FC-APC / SC-APC, Wide key = N = 2.15mm
CC305S Current Source to Mount Interconnect Cable
CC505S TEC to Mount Interconnect Cable

LDM-4604/RBFY Right Side Butterfly Laser Diode Mount Module
LDM-4604/LBFY Left Side Butterfly Laser Diode Mount Module
LDM-4616 Complete 16-Channel Laser Diode Butterfly Mount

SPECIFICATIONS FOR LDM-4604/XDIL LASER DIODE MOUNT MODULE

LASER PACKAGE STYLES SUPPORTED

14-pin Dual-In-Line (DIL) "Longhorn"

LASER PACKAGE SOCKET

Four Zero Insertion Force (ZIF) sockets with user configurable pin-headers (terminal blocks) for configuring various laser pinouts. "Longhorn" heatsink clips are removable for screwing Longhorn package directly to heatsink.

ELECTRICAL INPUT SPECIFICATIONS

Maximum laser current: 1 Amp
Maximum TEC current: 1 Amp

CHAPTER 2

OPERATION

INTRODUCTION

This chapter describes the electrical configuration and mounting of laser diodes.

CAUTION

The LDM-4604/xDIL features pin configuration headers (terminal blocks) for each socket within the mount. These headers allow various laser pinouts to be used. It is extremely important that you verify the configurations of the headers are correct for your laser types (pinouts). Incorrect wiring of these headers may result in failure or damage to the laser devices. Before installing your lasers, refer to the instructions below for details on how to correctly configure your mount.

CONFIGURING THE PIN HEADERS TO MATCH YOUR LASER PINOUT

The LDM-4604/xDIL Mount Module is equipped with electrical pin configuration headers (terminal blocks) which allow the mount to be used with various laser diode pinouts. These headers must be configured before mounting your lasers. Wires are included with the LDM-4604/xDIL shipping kit for configuring the headers.

If your module is installed in a chassis, you must remove the module before configuring the headers. To do this, remove the mount tray cover by lifting up on the finger tabs, then pull the cover toward you. It will slip off the hinge pins. There are up to four laser mounting modules in the chassis. Each module consists of four DIL or four butterfly sockets on a pedestal which is connected to a printed circuit board (PCB). There is a black plastic cover with two finger holes over the PCB. Modules must be installed in the correct position so numbers on the black plastic coincide with the channel numbers on the back of the mount. There are three fiber management clips in the black plastic.

To remove a module from a chassis, remove the four screws (eight screws in butterfly modules) that are recessed into the black plastic with a 3/32" hex socket wrench (supplied in shipping kit). See **figure 2.1**. Using the finger holes, pull the module straight toward the front of the mount to disengage the electrical connector at the back of the circuit board. **Do not lift up on the module, or you could break the electrical connector.** When the connector disengages, you can remove the module from the tray. It may be easier to configure the mount if you remove the three fiber management clips. To remove the clips, turn them 45 degrees and pull them out.

The next step is to configure the pins for each socket using the wires supplied with the LDM-4604/xDIL shipping kit. On the bottom of the module are three pin headers for each of the four sockets. Two of the three headers are labeled with laser package pin numbers, and the third header is labeled

with electrical connections from the back panel inputs. Put one wire into the electrical connection header and tighten the screw in that header location to secure the wire. Place the other end of the wire into the header slot corresponding to the pinout number for your particular laser and tighten the retaining screw. To facilitate routing, wires can be secured in the wire management clips. **Route the wires closer to the PCB than the surface of the black pedestal so they will not interfere with replacing the module in the mount.** See **figure 2.2**. The surface of the pedestal sits flush on the heat sink when assembled back in the mount tray. Repeat the process until all connections are made for each laser socket.

Please note that some pins on the package may have multiple functions. These pins are usually a common ground and one or two other functions, and there are typically more than one per package. Do not be concerned if one or more of these common pins are left unconnected. Simply verify that each of the functions (laser anode & cathode, photodiode anode & cathode, TE module anode & cathode, and two thermistor terminals) have the correct termination and polarity.

CAUTION

*Modules must be installed in the correct position in the chassis. Left modules must be installed in one of the two left slots, and right modules must be installed in one of the two right slots. All laser fiber pigtailed point toward the center of the chassis. In addition, channel numbers on the modules must be verified or changed in order to match the electrical connections with the channel numbers on the back of the chassis. The left most module has channels 1-4, the middle left module has channels 5-8, the middle right module has channels 9-12, and the right most module has channels 13-16. Within each module, the least significant number is at the back with increasing numbers moving toward the front of the chassis. See **Figure 2.3**.*

After configuring all four sockets (if needed), install the module in the chassis. See the **CAUTION** statement above about module location. Set the module flat in the tray, and push straight back until the electrical connector seats firmly. **Do not lift up on the module, or you could break the electrical connector.** Insert the screws holding the module to the heat sink. We recommend starting all screws before tightening them. Do not over tighten these screws. Replace any fiber management clips that you removed by inserting them into the holes and turning them 45 degrees.

Repeat the procedure for the other three modules (if needed). When replacing the modules, be sure they are returned to the proper location: number 1 socket is on the back left as you stand in front of the mount, number 5 is in back second from left, number 9 is in back third from left, and number 13 is in the back right corner. Numbered stickers are included in the shipping kit to number the sockets if needed.

Different types of lasers can be used in each socket, but it is imperative that each socket is properly configured for the specific laser that will be used in that socket. If the previous information does not adequately explain how to configure the mount for your laser, or if you are not sure if your electrical configuration is correct, do not operate the laser. Call Customer Service at ILX Lightwave for further information and instructions.

MOUNTING YOUR LASER DIODES

Prior to inserting your lasers, connect your current sources to the mount. When the mount and an ILX Lightwave laser current source are properly connected, the laser cathode and anode connections are shorted through the current source. This minimizes the risk of damage to the laser from electrostatic discharge, and also supports other laser safety features of ILX Lightwave laser diode drivers. Pin 3 of the channel 1 laser current connector grounds the mount chassis, so this pin must be connected properly for the mount to be grounded. After installing your laser, replace the tray cover. The cover improves thermal stability and helps provide shielding from radiated noise and transients in your laboratory.

The LDM-4616 mount chassis (LDM-4600) is equipped with a grounding connection on the right side of the front panel which is electrically connected to the chassis of the mount. We strongly recommend that you electrically ground yourself with a wrist strap. By plugging in a conductive wrist strap with a standard banana jack, you are assured of having your body at the same potential as the mount chassis.

CAUTION

This mount features pin configuration headers (terminal blocks) for each socket within the mount. These headers allow various laser pinouts to be used. It is extremely important that you verify that the configuration of each header is correct for the specific laser used in that socket. Incorrect wiring of these headers may result in failure or damage to the laser devices. Before installing your lasers, refer to the instructions above for details on how to correctly configure your mount.

Laser diodes are extremely susceptible to damage caused by electrostatic discharge and surge currents. To avoid early failure or damage to the device, instruments, workers and work benches must be grounded at all times when handling or working with laser diodes. Refer to ILX Lightwave Application Note #3, "Protecting Your Laser Diode," for more information.

*The mount chassis is grounded through pin 3 of the **channel 1** back panel connector, so this pin should be grounded before installing lasers. Connection to any ILX Lightwave laser current source with standard ILX Lightwave cables will ground pin 3 when the current source is plugged into a 3-prong electrical outlet.*

Inserting Your Laser

To mount a DIL packaged laser diode in the mount, use the following steps. Refer to **Figure 2.4**. Turn the laser socket clamp handle up to open pin clamps. Holding the laser package by the sides, carefully lower the laser onto the socket while aligning the laser leads with the appropriate contacts. Slide the "longhorn" ears into the slot next to the heat sink. The fiber pigtailed point toward the center of the mount. **Insure that each laser goes in a socket that was configured for the proper pinout.** Turn the socket clamp handle down to clamp the laser pins in the socket.

If you prefer to screw the laser directly to the heat sink for better thermal contact, remove the two screws on the socket holding the clips to the heat sink. These same two screws can be used to attach the laser package directly to the heat sink (there are threaded holes in the heat sink behind the clips), see **Figure 2.4**. Route your pigtail fiber through the fiber management clips and fiber spools to the front panel. Fiber management clips can be twisted together to securely retain the fiber. Verify other connections and current/temperature controller settings, and the laser is ready for operation.

WARNING

Visible and/or invisible laser radiation is dangerous and may cause serious eye damage. Avoid direct exposure to beam. Be sure all laser fibers, connectors, and mating adapters (like on the front panel of the mount) are connected or capped before turning on any lasers.

CHAPTER 3

MAINTENANCE AND SAFETY

MAINTENANCE

No maintenance procedures are required for the LDM-4604/xDIL module other than an occasional cleaning, as needed, to remove any accumulated dust or dirt from the external surfaces.

SAFETY

Laser diodes may emit infrared radiation which is invisible to the human eye. **Viewing of emissions from the fiber may cause eye damage.** Extreme care must be taken to prevent the beam from being viewed either directly or through external optics or mirrors. Be sure all laser fibers, connectors, and mating adapters (like on the front panel of the mount) are connected or capped before turning on any lasers. Use of protective goggles is recommended when operating lasers.